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Applicants : Jeffrey A. Sturgill et al.  
Serial No. : 10/038,150  
Filed : January 4, 2002  
Title : NON-TOXIC CORROSION-PROTECTION RINSES  
AND SEALS BASED ON COBALT  
Examiner : Scott R. Kastler  
Art Unit : 1742  
Confirm. No. : 7448

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES****Application of**

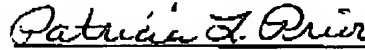
Applicants : Jeffrey A. Sturgill et al.  
Serial No. : 10/038,150  
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Title : NON-TOXIC CORROSION-PROTECTION RINSES AND SEALS  
BASED ON COBALT  
Docket : UVD 0299 PA  
Examiner : Scott R. Kastler  
Art Unit : 1742  
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**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents  
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Attorney - Patricia L. Prior

Reg. No. 33,758

Sir:

**RESPONSE TO NOTIFICATION OF NON-COMPLIANT  
APPEAL BRIEF (37 CFR §41.37**

This paper is being filed in response to the Notification mailed September 19, 2006, in the above-identified application. Pursuant to MPEP §1205.03,

(B) When the Office holds the brief to be defective solely due to appellant's failure to provide a summary of the claimed subject matter as required by 37 CFR 41.37(c)(1)(v), an entire new brief need not, and should not, be filed. Rather, a paper providing a summary of the claimed subject matter as required by 37 CFR 41.37(c)(1)(v) will suffice.

Accordingly, are providing herewith a revised Summary of the Claimed Subject Matter in compliance with the rule.

**Summary of the Claimed Subject Matter**

Applicants' invention is directed to a solid corrosion-inhibiting seal. As described in the Background of the Invention, anodic coatings, phosphate coatings, and black oxide coatings frequently exhibit flaws, such as pores, pinholes, or thin portions in the coating after formation and do not contain any inherent means to repair the coating breaches. A

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second coating is applied to fill in the pores and deposit compounds that will act as long-term protective species. P. 2, lines 7-25.

There are four independent claims involved in this appeal, claims 1, 124, 125, and 126. A concise explanation of the subject matter of each is provided below.

*Concise Explanation of the Subject Matter Defined in Independent Claim 1*

A solid corrosion-inhibiting seal is described in the specification. The seal is formed on a coating selected from anodic coatings, phosphating coatings, or black oxide coatings. P. 6, line 9 to p. 7, line 2; p. 14, lines 25-28; and Table 1. The solid corrosion-inhibiting seal comprises cobalt, wherein the cobalt is trivalent cobalt, tetravalent cobalt, or combinations thereof, and a valence stabilizer combined to form a cobalt/valence stabilizer complex within the solid corrosion-inhibiting seal. P. 9, line 21 to p. 13, line 8; and p. 15, line 17 to p. 26, line 19. The cobalt/valence stabilizer complex has a solubility in water of between about  $5 \times 10^{-1}$  and about  $1 \times 10^{-5}$  moles per liter of cobalt at about 25°C and about 760 Torr. P. 10, line 21 to p. 11, line 11; p. 12, lines 9-22; and p. 16, line 19 to p. 17, line 16.

*Concise Explanation of the Subject Matter Defined in Independent Claim 124*

A solid corrosion-inhibiting seal for a barrier film is described in the specification. The solid corrosion-inhibiting seal comprises cobalt, wherein the cobalt is trivalent cobalt, tetravalent cobalt, or combinations thereof, and a valence stabilizer combined to form a cobalt/valence stabilizer complex. P. 9, line 21 to p. 13, line 8; and p. 15, line 17 to p. 26, line 19. The valence stabilizer is selected from molybdates, tungstates, vanadates, niobates, tantalates, tellurates, periodates, iodates, carbonates, antimonates, stannates, titanates, zirconates, hafnates, bismuthates, germanates, arsenates, phosphates, borates, aluminates, and silicates, and combinations thereof. P. 23, lines 19-31; and p. 150, line 25 to p. 151, line 14. The cobalt/valence stabilizer complex has a central cavity containing a cobalt ion and an additional ion selected from  $B^{+3}$ ,  $Al^{+3}$ ,  $Si^{+4}$ ,  $P^{+5}$ ,  $Ti^{+4}$ ,  $V^{+5}$ ,  $V^{+4}$ ,  $Cr^{+6}$ ,  $Cr^{+3}$ ,  $Mn^{+4}$ ,  $Mn^{+3}$ ,  $Mn^{+2}$ ,  $Fe^{+3}$ ,  $Fe^{+2}$ ,  $Co^{+2}$ ,  $Ni^{+2}$ ,  $Ni^{+3}$ ,  $Ni^{+4}$ ,  $Cu^{+2}$ ,  $Cu^{+3}$ ,  $Zn^{+2}$ ,  $Ga^{+3}$ ,  $Ge^{+4}$ ,  $As^{+5}$ ,  $As^{+3}$ ,  $Zr^{+4}$ , or  $Ce^{+4}$ . P. 21, lines 21-26; p. 23, line 30 to p. 25, line 19; and p. 151, line 15 to p. 152, line 2.

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*Concise Explanation of the Subject Matter Defined in Independent Claim 125*

A corrosion-inhibiting seal for a barrier film is described in the specification. The seal comprises cobalt, wherein the cobalt is trivalent cobalt, tetravalent cobalt, or combinations thereof, and a valence stabilizer combined to form a cobalt/valence stabilizer complex. P. 9, line 21 to p. 13, line 8; and p. 15, line 17 to p. 26, line 19. The valence stabilizer is an organic valence stabilizer selected from monoamines; diamines; triamines; tetraamines; pentamines; hexamines; five- or six-membered heterocyclic rings containing one to four nitrogen atoms optionally having additional nitrogen, sulfur, or oxygen binding sites; five- or six-membered heterocyclic rings containing one or two sulfur atoms and having additional nitrogen binding sites; five- or six-membered heterocyclic rings containing one or two oxygen atoms and having additional nitrogen binding sites; (two-, three-, four-, six-, eight-, or ten-)membered nitrogen, nitrogen-sulfur, or nitrogen-oxygen macrocyclics; macrocyclic oligothioketones or dithiolenes; diazenes; thio-, amido-, or imido- derivatives of hypophosphoric, phosphoric, or diphosphoric acids and salts; azo compounds, triazenes, formazans, azines, hydrazones, or Schiff Bases containing at least two azo, imine, or azine groups; azo compounds, triazenes, formazans, azines, hydrazones, or Schiff Bases with ortho- (for aryl) or alpha- or beta- (for alkyl) substitution; oximes; amidines and imido compounds; dithio ligands; amides; amino acids; N-(thio)acyl 7-aminobenzylidenimines; (thio)hydroxamates; alpha- or ortho- aminothio(di)carboxylic acids and salts; (thio)semicarbazones; (thio)acyl hydrazones; (thio)carbazones; silylaminoalcohols; thioalkyl amines and imines; hydroxyalkyl imines; (thio)aryl amines and imines; guanylureas; guanidinoureas; 2-nitrosophenols; 2-nitrophenols; N-nitrosohydroxylamines; 1,3-monothioketones; monothiomalonamides; 2-thioacylacetamides; 2-acylthioacetamides; dithiodicarbonyl diamides; trithiodicarboxylic acids and salts; monothiocarbamates; monothioethers; dithioethers; trithioethers; tetrathioethers; pentathioethers; hexathioethers; disulfides; monophosphines; diphosphines; triphosphines; tetraphosphines; pentaphosphines; hexaphosphines; five- or six-membered heterocyclic rings containing one or two sulfur atoms optionally having additional sulfur, oxygen, or phosphorus binding sites; five- or six-membered heterocyclic rings containing one to three phosphorus atoms optionally having additional phosphorus, nitrogen, oxygen, or sulfur binding sites; five- or six-membered heterocyclic

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rings containing one to four nitrogen atoms and having additional phosphorus binding sites; five- or six-membered heterocyclic rings containing one or two oxygen atoms and having additional sulfur or phosphorus binding sites; (five-, seven-, or nine-)membered nitrogen, nitrogen-sulfur, or nitrogen-oxygen macrocyclics; (two- to ten-)membered sulfur, sulfur-oxygen, or sulfur-phosphorus macrocyclics, not including oligothioketones or dithiolenes; (two- to ten-)membered phosphorus, nitrogen-phosphorus, or oxygen-phosphorus macrocyclics; thio-, amido-, or imido- derivatives of phosphonic and diphosphonic acids and salts containing no sulfur binding sites; amido-, or imido- derivatives of hypophosphoric, phosphoric, or diphosphoric acids and salts containing no sulfur binding sites; dithioperoxydiphosphoramides; dithioperoxydiphosphoric acids and salts; monothioperoxydiphosphoramides; monothioperoxydiphosphoric acids and salts; monothiophosphoric acids; phosphoro(dithioperoxoic) acids and salts; azo compounds, triazenes, formazans, azines, or Schiff Bases; silylamines; silazanes; guanidines and diguanidines; pyridinaldimines; hydrazones; hydramides; nitriles; thioureas and thioamides; ureas and biurets; monothio ligands; diketone ligands; dithioacyl disulfides; tetrathioperoxydicarbonic diamides; (hexa-, penta-, or tetra-)thioperoxydicarbonic acids and salts; 1,2-dithiolates; rhodanines; dithiocarbimates; (thio)xanthates; S-(alkyl- or aryl-thio)thiocarboxylic acids and salts; phosphinodithioformates; (thio)borates and (thio)boronates; (thio)arsonic acids and salts; (thio)antimonic acids and salts; phosphine and arsine sulfides or oxides; beta-hydroxyketones and -aldehydes; squaric acids and salts; carbamates and carbimates; carbazates; imidosulfurous diamides; sulfurdiimines; thiocarbonyl and mercapto oximes; 2-nitrothiophenols; 2-nitrilo(thio)phenols; acylcyanamides, imidates; 2-amidinoacetates; beta-ketoamines; 3-aminoacrylamides and 3,3-diaminoacrylamides; 3-aminoacrylic acids and salts and 3-hydroxy-3-aminoacrylic acids and salts; 2-nitroanilines; amine and diazine N-oxides; hydrazides and semicarbazides; (amino- or imino-)aryl phosphines; (thio- or hydroxy-)aryl phosphines; arsines; five- or six-membered heterocyclic rings containing one arsenic atom optionally having additional arsenic binding sites; (two- to six-)membered arsenic macrocyclics; selenoethers; five- or six-membered heterocyclic rings containing one or two selenium atoms optionally having additional selenium binding sites; (two- to six-)membered selenium macrocyclics; 1,3-diselenoketones; 1,1-diselenolates; diselenocarbamates;

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selenophosphoric acids and salts; selenocarbonates; cyanide, isocyanide, and cyanamide ligands; nitrosyl and nitrite ligands; azide ligands; thiolates and selenolates; (thio)cyanate ligands; diene or bicyclic or tricyclic hydrocarbon ligands; and carbonyl, halogen, or hydroxo ligands; or combinations thereof. P. 25, line 21 to p. 26, line 19; Tables 2 and 3; p. 66, line 2 to p. 150, line 12; p. 152, lines 7-13; and p. 211, line 2, to p. 325, line 29. The solubility of the cobalt/valence stabilizer complex in water is decreased by the addition of a substituent group on the organic valence stabilizer, the substituent group selected from nitro groups ( $-\text{NO}_2$ ), perfluoroalkyl groups ( $-\text{C}_x\text{F}_{2x+1}$ ), perchloroalkyl groups ( $-\text{C}_x\text{Cl}_{2x+1}$ ), nitramine groups ( $=\text{N}-\text{NO}_2$ ), thioketone groups ( $=\text{C}=\text{S}$ ), sulfenyl halide groups ( $-\text{S}-\text{X}$ ), and sulfur dihaloimide groups ( $-\text{N}=\text{SX}_2$ ), or combinations thereof. P. 22, lines 23-26.

*Concise Explanation of the Subject Matter Defined in Independent Claim 126*

A solid corrosion-inhibiting seal is described in the specification. The seal is formed on a coating selected from anodic coatings, phosphating coatings, or black oxide coatings. P. 6, line 9 to p. 7, line 2; p. 14, lines 25-28; and Table 1. The solid corrosion-inhibiting seal comprising cobalt, wherein the cobalt is trivalent cobalt, tetravalent cobalt, or combinations thereof, and a valence stabilizer combined to form a cobalt/valence stabilizer complex within the solid corrosion-inhibiting seal. P. 9, line 21 to p. 13, line 8; and p. 15, line 17 to p. 26, line 19. The cobalt/valence stabilizer complex is sparingly soluble in water at about 25°C and about 760 Torr. P. 10, line 21 to p. 11, line 11; p. 12, lines 9-22; p. 16, line 19 to p. 17, line 16.

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In addition, the corrosion-inhibiting seal can include a cationic or anionic solubility control agent. P. 331, line 16 to p. 337, line 29. The corrosion-inhibiting seal can include a lubricity agent. P. 337, line 31 to p. 338, line 8. The corrosion-inhibiting seal can be colored and can include agents which improve the color-fastness. P. 338, line 10 to p. 339, line 12.

Respectfully submitted,  
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